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Artificial erythrocyte - comprises modified liposome of lipid membrane  
contg. aq. soln. of haemoglobin and allosteric effector

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Patent Family:

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Patent Details:

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JP 4300838	A	7	A61K-037/14	

Abstract (Basic): JP 4300838 A

Artificial erythrocyte comprises liposome of lipid membrane  
contg. aq. soln. of haemoglobin and allosteric effector. The liposome  
is modified with a coagulation inhibitor hydrophobic terminal part  
fixed with the membrane-surface hydrophylic part outside of the  
liposome. The wt. ratio of lipid of liposome and hemoglobin is  
0.40-1.67.

Pref. the allosteric effector is inositol hexaphosphate. The  
hydrophobic part of the coagulation inhibitor is an alcohol with a long  
chain fatty acid, sterol, or polyoxypropylene alkyl or phospholipid.  
The hydrophilic polymer chain part is polyethylene glycol. The lipid  
membrane contains vitamin E antioxidant.

In an example, an aq. soln. (108 g) of a powder mix of  
phosphatidyl choline, cholesterol, myristic acid, and vitamin E (180g).  
is stirred with inositol hexaphosphate (0.8 ml based on 1 ml of  
Haemoglobin), and a haemoglobin soln. (600 ml) contg. 50 W/V of  
haemoglobin, to form a soln. contg liposome with 220 nm average grain  
size. Physiological saline soln. contg. 6 wt.% of hydroxy ethyl starch  
is added to the soln. contg. to form a liposome suspension (120 ml).  
Monomethoxy polyethylene glycol (PEG) (100g) is dissolved in  
1,2-dichloroethane (500 ml) and reflux-treated with addn. of succinic  
anhydride (10g) and pyridine (8ml). Obtd. reaction soln. is dissolved  
in water (200 ml), cleaned with ether, and extd. with chloroform (200  
ml). After evaporation, the soln. is dissolved in ethanol (400 ml),  
purified with hexane, and dried to form PEG with one carboxy terminal.  
The PEG (30g) hydrogenated phosphatidyl ethanol amine (7g),  
dicyclohexyl carbodiimide (1,8g) are added to chloroform (50 ml) and  
reacted at 50 deg.C overnight. Obtd. reaction product is purified to  
obtain phospholipid. coagulation inhibitor. The inhibitor (5 wt.%  
haemoglobin) is added to the liposome soln. and incubated at 37 deg.C  
for 3 hrs. to form a haemoglobin-contg. liposome suspen

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Title Terms: ARTIFICIAL; ERYTHROCYTE; COMPRISE; MODIFIED; LIPOSOME ; LIPID  
; MEMBRANE; CONTAIN; AQUEOUS; SOLUTION; HAEMOGLOBIN; EFFECTOR

Derwent Class: A96; B04; B05

International Patent Class (Main): A61K-037/14

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